

# BZG03C15 Series

## 600 Watt Peak Power Zener Surge Rated Voltage Regulators

The SMA series is supplied in ON Semiconductor's exclusive, cost-effective, highly reliable SURMETIC™ package and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications. This new line of 1.5 watt Zener diodes offers the following advantages:

### Specification Features:

- Standard Zener Breakdown Voltage – 15 V to 150 V
- Peak Power 600 Watts @ 100  $\mu$ s
- ESD Rating of Class 3 (> 16 KV) per Human Body Model
- Response Time is Typically < 1.0 ns
- Flat Handling Surface for Accurate Placement
- Package Design for Top Slide or Bottom Circuit Board Mounting
- Low Profile Package

### Mechanical Characteristics:

**CASE:** Void-free, transfer-molded plastic

**FINISH:** All external surfaces are corrosion resistant and leads are readily solderable

**MAXIMUM CASE TEMPERATURE FOR SOLDERING PURPOSES:**  
260°C for 10 Seconds

**POLARITY:** Cathode indicated by molded polarity notch or polarity band

**MOUNTING POSITION:** Any

### MAXIMUM RATINGS

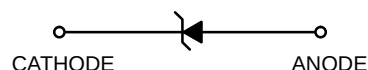
Please See the Table on the Following Page



**ON Semiconductor®**

<http://onsemi.com>

## PLASTIC SURFACE MOUNT ZENER VOLTAGE REGULATORS 600 WATTS PEAK POWER



**SMA  
CASE 403D  
PLASTIC**

### MARKING DIAGRAM



xx = Specific Device Code  
(See Table on Page 2)  
LL = Assembly Location  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

| Device *  | Package | Shipping†        |
|-----------|---------|------------------|
| BZG03C15  | SMA     | 5000/Tape & Reel |
| BZG03C150 | SMA     | 5000/Tape & Reel |

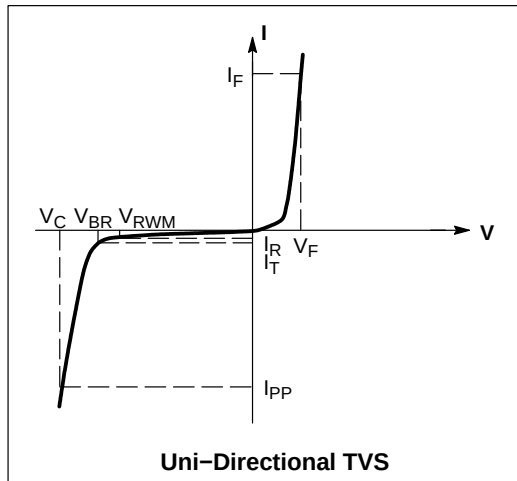
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

## BZG03C15 Series

### MAXIMUM RATINGS

| Rating                                                                                                                   | Symbol          | Value       | Unit                                              |
|--------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|---------------------------------------------------|
| Peak Power Dissipation (Note 1) @ $T_L = 25^\circ\text{C}$ , $t_P = 100\ \mu\text{s}$                                    | $P_{ZSM}$       | 600         | W                                                 |
| DC Power Dissipation @ $T_L = 75^\circ\text{C}$<br>Measured Zero Lead Length (Note 2)<br>Derate Above $75^\circ\text{C}$ | $P_D$           | 1.5         | W                                                 |
| Thermal Resistance from Junction to Lead                                                                                 | $R_{\theta JL}$ | 20<br>50    | mW/ $^\circ\text{C}$<br>$^\circ\text{C}/\text{W}$ |
| Forward Surge Current (Note 3) @ $T_A = 25^\circ\text{C}$                                                                | $I_{FSM}$       | 40          | A                                                 |
| Operating and Storage Temperature Range                                                                                  | $T_J, T_{stg}$  | -65 to +150 | $^\circ\text{C}$                                  |

- 100  $\mu\text{s}$ , non-repetitive square pulse
- 1" square copper pad, FR-4 board
- 1/2 sine wave (or equivalent square wave),  $PW = 8.3\ \text{ms}$ , duty cycle = 4 pulses per minute maximum



### SYMBOLS DEFINITIONS

| Symbol    | Parameter                                   |
|-----------|---------------------------------------------|
| $I_{PP}$  | Maximum Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$                 |
| $V_{RWM}$ | Working Peak Reverse Voltage                |
| $I_R$     | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$                   |
| $I_T$     | Test Current                                |
| $I_F$     | Forward Current                             |
| $V_F$     | Forward Voltage @ $I_F$                     |

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 1.2\ \text{V}$ Max. @ $I_F = 0.5\ \text{A}$ for all types)

| Device    | Device Marking | $V_{RWM}$<br>(Note 4) | $I_R$ @ $V_{RWM}$ | Breakdown Voltage     |      |      | $Z_{zt}$ @ $I_T$ |     |
|-----------|----------------|-----------------------|-------------------|-----------------------|------|------|------------------|-----|
|           |                |                       |                   | $V_{BR}$ (V) (Note 5) |      |      | @ $I_T$          |     |
|           |                | Volts                 | $\mu\text{A}$     | Min                   | Nom  | Max  | $\text{mA}$      |     |
| BZG03C15  | G15            | 11                    | 1                 | 13.8                  | 15.0 | 15.6 | 50               | 5.0 |
| BZG03C150 | G150           | 110                   | 1                 | 138                   | 150  | 156  | 5                | 130 |

- A transient suppressor is normally selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level
- $V_{BR}$  measured at pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$

# BZG03C15 Series

## RATING AND TYPICAL CHARACTERISTIC CURVES

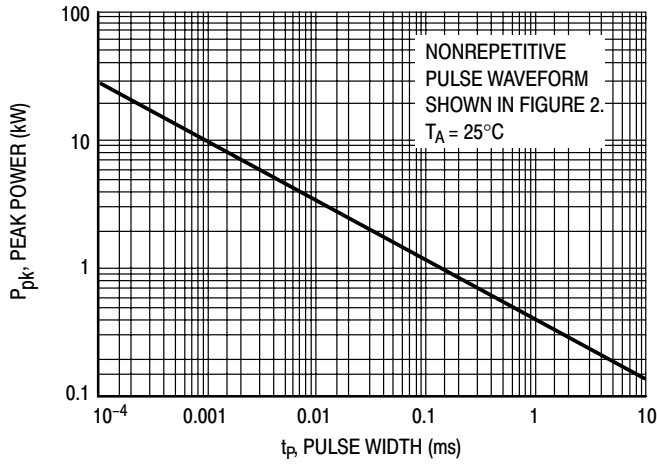


Figure 1. Pulse Rating Curve

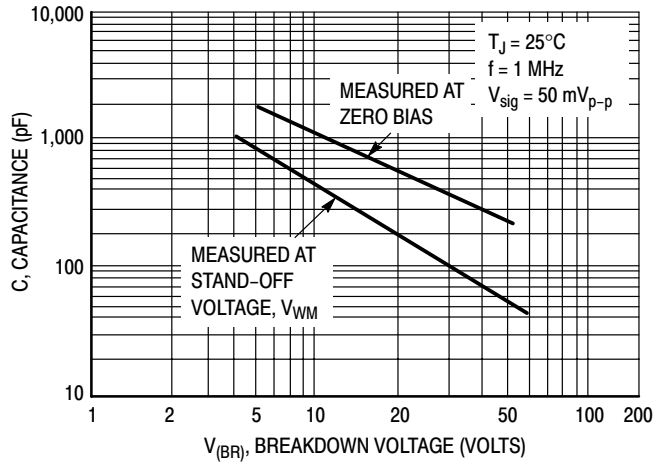


Figure 3. Typical Junction Capacitance

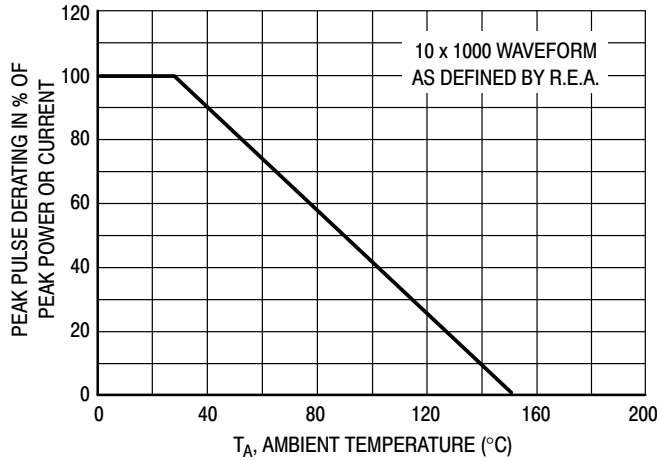


Figure 2. Pulse Derating Curve

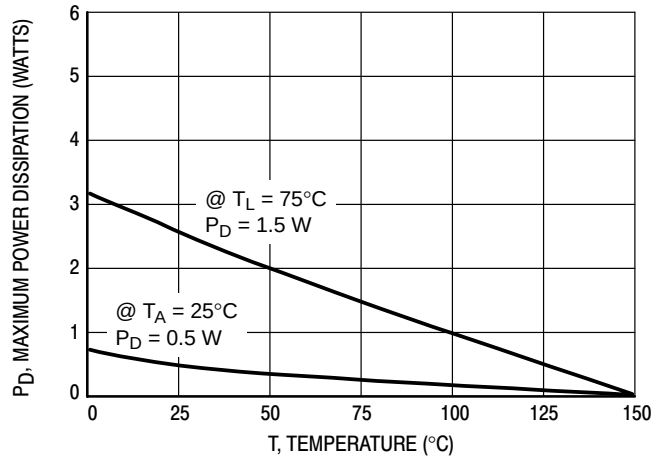
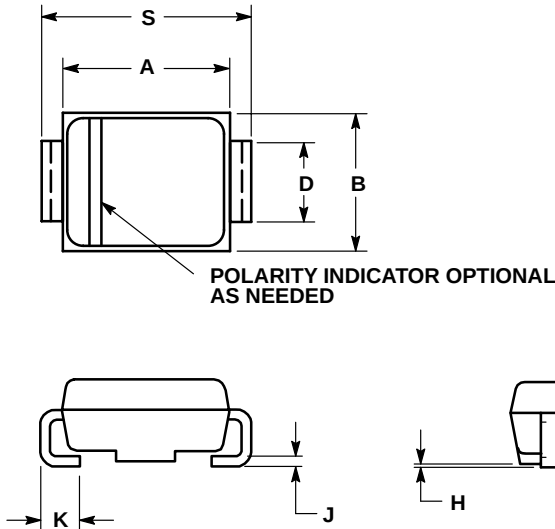


Figure 4. Steady State Power Derating

# BZG03C15 Series

## PACKAGE DIMENSIONS

SMA  
CASE 403D-02  
ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.160  | 0.180 | 4.06        | 4.57 |
| B   | 0.090  | 0.115 | 2.29        | 2.92 |
| C   | 0.075  | 0.095 | 1.91        | 2.41 |
| D   | 0.050  | 0.064 | 1.27        | 1.63 |
| H   | 0.002  | 0.006 | 0.05        | 0.15 |
| J   | 0.006  | 0.016 | 0.15        | 0.41 |
| K   | 0.030  | 0.060 | 0.76        | 1.52 |
| S   | 0.190  | 0.220 | 4.83        | 5.59 |

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